

SNUPPS

Standardized Nuclear Unit
Power Plant System

5 Choke Cherry Road
Rockville, Maryland 20850
(301) 869-8010

Nicholas A. Petrick
Executive Director

May 18, 1984

SLNRC 84-0084 FILE: 0543/0278
SUBJ: Instrumentation and Control
Systems Branch Technical
Specification Questions

Mr. Harold R. Denton, Director
Office of Nuclear Reactor Regulation
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

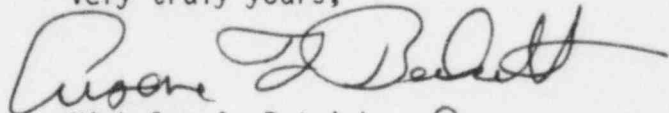

Docket Nos.: STN 50-482
STN 50-483

Reference: NRC (B. J. Youngblood) letter to UE (D. F. Schnell) and
KGE (G. L. Koester) dated 5/16/84, Request for Additional
Information - I&C Technical Specifications

Dear Mr. Denton:

Responses to the Instrumentation and Control Systems branch questions
contained in the referenced letter are forwarded herewith.

Very truly yours,


Nicholas A. Petrick 

JHR/bds
Attachment

cc: D. F. Schnell	UE
G. L. Koester	KGE
D. T. McPhee	KCPL
J. Neisler/B. Little	USNRC/Ca1
H. Bundy	USNRC/WC
B. L. Forney	USNRC/RIII
E. H. Johnson	USNRC/RIV

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1. Technical Specification 2.2 (Table 2.2-1)

Upon request, the applicants supplied information discussing equations used for calculating the trip setpoints for Overtemperature ΔT and Overpower ΔT . The applicants have informed the staff that there are differences between the equations in the FSAR and those identified in the SNUPPS Technical Specifications. However, the technical specification equations contain all the components in the Overtemperature ΔT and Overpower ΔT circuitry which are important to the protection function and which are modeled in the analysis. Based on this, the staff recommends that the FSAR be revised to be consistent with the technical specification equations. This issue is considered resolved pending satisfactory revision of the FSAR.

RESPONSE

1. The FSAR will be changed with revision 15 to make the overtemperature and overpower ΔT equations consistent with those in Technical Specification Table 2.2-1.

2. Technical Specification Section 2.2 and 3/4.3.2 (Tables 2.2-1 and 3.3-4 respectively)

The staff requested the applicants to provide information to justify the omission of environmental errors for setpoint calculations related to diverse (backup) protection trip functions or to include appropriate errors for the backup trips. By letter (N. Petrick of SNUPPS to H. Denton of NRC) dated April 23, 1984, the applicants stated that this requirement should be reviewed as a generic issue prior to implementation. The applicant's basis for this determination is that the NRC staff has never questioned the exclusion of environmental errors (for diverse trips) on any other plant reviewed prior to SNUPPS.

The staff does not consider this issue to be generic. It should be noted that even though the SNUPPS setpoint methodology program is the same as that reviewed and approved for use at Virgil Summer, the use (inclusion, exclusion) and values of the variables and design allowances associated with the setpoint calculations will vary from plant-to-plant. Such is the case with the environmental errors. The staff considers this to be plant specific since the actual installation of the equipment on each plant determines the need for the inclusion or exclusion of environmental errors for various parameters. Based on this, the staff considers the applicants above proposal (i.e., to handle this issue generically) unacceptable. Therefore, the staff continues to require the applicants to provide information prior to operation above 5% power to justify the omission of environmental errors for setpoint calculations related to the diverse trip functions or to incorporate environmental errors where appropriate.

Response:

2. During a meeting with ICSB on May 17, 1984 it was agreed that the Technical Specifications would be accepted as written with the understanding that resolution of this issue will be reached prior to operation above 5% power.

3. Technical Specification Section 3/4.3.3 (Subsection 3.3.3.5 and 3.3.3.6 respectively)

- A. The staff proposed that the SNUPPS Technical Specifications for remote shutdown be modified based on a December 30, 1982 memorandum from R. Mattson to D. Eisenhut. The applicants responded by letter (N. Petrick of SNUPPS to H. Denton of NRC) dated April 23, 1984. The applicants informed the staff that the recommendation for the imposition of limiting conditions for operation and surveillance requirements for the transfer switches, power, and control circuits appears to be unwarranted and should be treated as a generic issue.

The staff finds the applicants statement that such requirements are unwarranted to be unacceptable. The staff believes that the changes recommended by the December 30, 1982 memorandum are necessary to adequately address the operability of the remote shutdown systems required under the provisions of GDC 19. Also, the subject memorandum was written in accordance with NRR Office Letter No. 38 for the purpose of proposing a change to the Standard Technical Specification. It should be noted that the December 30, 1982 memorandum requests that the necessary changes be implemented immediately on OL reviews and that this is allowed by NRR Office Letter No. 38.

Based on the above, the staff continues to require that Section 3/4.3.3 of the SNUPPS Technical Specifications should be modified to include the proposed recommendations.

Response:

#3A. SNUPPS has modified the Remote Shutdown Monitoring Instrumentation, specification 3.3.3.5, to include:

Instrumentation

Auxiliary Feedwater Pump Suction Pressure

In addition SNUPPS has included a proposed Technical Specification 3.4.7.13 for the REMOTE SHUTDOWN PANEL which includes appropriate limiting conditions for operation, action statement and surveillance requirements.

PLANT SYSTEMS

3/4.7.13 AUXILIARY SHUTDOWN PANEL

LIMITING CONDITION FOR OPERATION

3.7.13 The Auxiliary Shutdown Panel shall be OPERABLE with the capability to establish and maintain the plant in a HOT STANDBY condition.

APPLICABILITY: MODES 1, 2 and 3

- ACTION:
- a. With the auxiliary shutdown panel controls inoperable, restore the auxiliary shutdown panel controls to OPERABLE status within 7 days or be in at least HOT STANDBY within the next 12 hours.
 - b. The provision of Specification 3.0.4 are not applicable.

SURVEILLANCE REQUIREMENTS

4.7.13 The auxiliary shutdown panel controls shall be demonstrated OPERABLE at least once per 18 months. The provisions of Specification 4.0.4 are not applicable for entry into Mode 3 for the turbine driven auxiliary feedwater pump and the atmospheric dump valves.

TABLE 3.3-9

REMOTE SHUTDOWN MONITORING INSTRUMENTATION

<u>INSTRUMENT</u>	<u>READOUT LOCATION</u>	<u>TOTAL NO. OF CHANNELS</u>	<u>MINIMUM CHANNELS OPERABLE</u>
1. RCS Pressure-Wide Range	ASP*	2	1
2. Reactor Coolant Temperature- Cold Leg	ASP*	4	1
3. Source Range Neutron Flux	ASP*	2	1
4. Reactor Trip Breaker Indication	RTS**	1/trip breaker	1/trip breaker
5. Reactor Coolant Temperature - Hot Leg	ASP*	2	1
6. Reactor Coolant Pump Breakers	***	1/pump	1/pump
7. Pressurizer Pressure	ASP*	1	1
8. Pressurizer Level	ASP*	2	1
9. Steam Generator Pressure	ASP*	2/stm. gen.	1/stm. gen.
10. Steam Generator Level	ASP*	2/stm. gen.	1/stm. gen.
11. Auxiliary Feedwater Flow Rate	ASP*	4	1
12. Auxiliary Feedwater Suction Press	ASP*	3	1

*Auxiliary Shutdown Panel

**Reactor Trip Switchgear

***13.8 kV Switchgear

TABLE 4.3-6

REMOTE SHUTDOWN MONITORING INSTRUMENTATION
SURVEILLANCE REQUIREMENTS

<u>INSTRUMENT</u>	<u>CHANNEL CHECK</u>	<u>CHANNEL CALIBRATION</u>
1. RCS Pressure - Wide Range	M	R
2. Reactor Coolant Temperature - Cold Leg	M	R
3. Source Range, Neutron Flux	M	R
4. Reactor Trip Breaker Indication	M	N.A.
5. Reactor Coolant Temperature - Hot Leg	M	R
6. Reactor Coolant Pump Breakers	N.A.	N.A.
7. Pressurizer Pressure	M	R
8. Pressurizer Level	M	R
9. Steam Generator Pressure	M	R
10. Steam Generator Level	M	R
11. Auxiliary Feedwater Flow Rate	M	R
12. Auxiliary Feedwater Pump Suction Press	M	R

- B. The staff proposed that the SNUPPS Technical Specifications for post accident monitoring be modified based on a October 12, 1983 memorandum from R. Mattson to D. Eisenhut. The applicants responded stating that the SNUPPS Technical Specifications for post accident monitoring instrumentation meets or exceeds the requirements of R.G. 1.97, Revision 2 with the exception of reactor coolant radiation level monitors and the containment isolation valve position indication.

The staff is aware (based on review of FSAR Appendix 7A) that an exception is being taken related to the installation of the reactor coolant radiation level monitors. Justification for this and other exceptions is currently under review by the staff. Until the staff completes its review of the SNUPPS design for compliance to R.G. 1.97, Revision 2 recommendations, a license condition will be imposed requiring the satisfactory resolution of all such review findings. The staff is not aware of an exception related to containment isolation valve position indication. This parameter is considered to be Category 1 and should, therefore, be included in the technical specification post accident monitoring tables. Also, the technical specification tables do not include neutron flux indication which is a Category 1 variable.

It should be noted that the October 12, 1983 memorandum recommends revising Section 6.8.4 of the subject technical specifications to

provide periodic surveillance of the Category 2 and 3 instrumentation and appropriate actions for cases when Category 2 and 3 instruments are inoperable. This was not addressed by the applicants.

The October 12, 1983 memorandum was written in accordance with NRR Office Letter No. 38 for the purpose of proposing changes to the Standard Technical Specifications and to request that these changes be implemented immediately on OL reviews as allowed by the office letter. Therefore, based on this and the above discussion, the staff continues to require modification of the SNUPPS Technical Specification Sections 3/4.3.3 and 6.8.4 as recommended by the subject memorandum.

Responses:

#3B Based on the meeting with ICSB on May 17, 1984 the following was agreed upon:

- 1) The staff will continue to review the exemptions that the SNUPPS utilities have proposed in its response to Reg. Guide 1.97, Revision 2. A license condition will be imposed requiring the satisfactory resolution of all such review findings. The surveillance requirements for category 2 and 3 instruments will be resolved with the satisfaction of the license condition. No utility action is required at this time.
- 2) Containment Isolation Valve Position Indication - this Category 1 item of Reg. Guide 1.97, Rev. 2 is not specifically addressed in the accident monitoring instrumentation table of the Callaway Technical Specifications. However, OPERABILITY for the Containment Isolation Valve position indication is covered by Specification 3.6.3 and is surveilled by Specification 4.6.3.1.
- 3) Neutron flux indication is already available with the existing source range monitors which are surveilled by specification 4.3.1.1. SNUPPS has committed to installing a qualified source range flux monitor prior to start up from the first refueling outage. The new source range monitor will be added to specification 3.3.6 when it is operable.

4. Technical Specification Sections 3/4.5.1 and 3/4.5.2
(Subsections 4.5.1.1 and 4.5.2 respectively)

The applicants were requested to provide appropriate limiting conditions for operation and surveillance requirements related to the interlocks associated with the accumulator isolation valves and the RHR suction isolation valves. By letter (N. Petrick of SNUPPS to H. Denton of NRC) dated April 23, 1984, the applicants informed the staff that the technical specifications were modified to replace the testing of the accumulator isolation valve interlocks with a surveillance requirement to verify the valve is open with power removed when above 1000 psig on a 31 day frequency. The applicants stated that this interlock is not required to operate. The staff finds this unacceptable.

The staff accepted the SNUPPS design on the basis that the emergency core cooling system (ECCS) depended on the proper functioning of the accumulator isolation valve interlocks. Refer to SNUPPS SER Section 7.6.2 for the staff's evaluation on this issue as it relates to compliance with BTP ICSB 4.

Based on the above, the staff continues to require appropriate limiting conditions for operation and surveillance requirements in the SNUPPS Technical Specifications for the accumulator isolation valve interlocks prior to fuel load. Otherwise, justification should be provided to show why the interlock is not required.

The applicants have verified that the reactor coolant system pressure channels associated with the RHR suction isolation valve interlocks are surveilled and calibrated periodically as part of the existing technical specifications. The staff finds this acceptable.

RESPONSE

4. This question was discussed with ICSB during a meeting on May 17, 1984 and it was agreed that no surveillance requirements on the interlock associated with the accumulator isolation valves would be required. The Technical Specifications will not be revised.

5. Technical Specification 3/4.7.5 (Subsection 4.7.5.2)

The staff recommended that the applicants revise the technical specifications prior to fuel load to include appropriate surveillance requirements and limiting conditions for operation for the temperature (85°F) actuation channel associated with the ultimate heat sink (UHS) cooling tower fans (Callaway only). The applicants responded stating that it would take about 6 hours to raise the UHS temperature from the auto start setpoint of 85°F to the Design Basis temperature of 95°F. Based on this, the applicants have stated that no technical specification is required for the auto start function. The staff finds this unacceptable.

The staff found the Callaway UHS system design to be acceptable based on the automatic start function associated with the UHS cooling tower fans being operable. It should be noted that the current technical specifications allow the UHS water temperature to be $\leq 95^{\circ}\text{F}$ and still be considered operable. Therefore, the staff continues to require appropriate technical specifications for the subject automatic start function or the applicants should provide an analysis justifying that the automatic operation of the UHS cooling tower fans is not required. This should be resolved prior to fuel load.

Response:

- #5 During a meeting with ICSB and ASB on May 17, 1984 it was agreed that Technical Specifications on the ultimate heat sink cooling tower fan temperature actuation channel would not be required if it could be proven that the operator had at least one half hour to respond between the time the UHS temperature reached its Technical Specification limit (90°) and the time the temperature reached its design limit (95°). It has been determined that based on the maximum UHS heat load and the minimum UHS pond level required for safe shutdown (9 feet) it would take approximately forty-five minutes for the temperature to rise from 90 to 95 degrees. Therefore sufficient time is available for the operator to turn on the fans and stop the temperature rise should the automatic feature not function properly. Any UHS pond level above this will allow even more time for operator action.

6. Switchover of Charging Pump Suction to RWST on Low-Low VCT Level

The applicants were requested to provide appropriate limiting conditions for operation and surveillance requirements in the SNUPPS Technical Specifications for automatic switchover of the charging pump suction to the RWST on Low-Low VCT level. The applicants responded that there is sufficient time available for the operator to respond to such a transient. The information supplied by the applicant is insufficient to allow the staff to perform an independent evaluation of the applicants' claim. Therefore, the applicants should provide the following additional information prior to fuel load:

- A. The minimum amount of time available to the operator to switch pump suction to the RWST assuming the worst-case scenario, and
- B. A description of the CR alarms and indications that will alert the operator of a loss of VCT inventory and the need for switchover.

Response:

- #6 LCO and surveillance requirements for automatic switchover of the charging pump suction to the RWST on Low-Low VCT level are not required. A single failure of this system has no safety consequence. There are two independent safety grade VCT level circuits which provide automatic VCT Low-Low level switchover at 1% VCT level. Each circuit will open a flowpath from the RWST to the charging pump suction (paths are parallel) and isolate the flowpath from the VCT to the charging pump suction (isolation is in series). Proper operation of either level channel is sufficient to ensure maintaining charging pump suction. Failure of the VCT Low-Low switchover circuit contacts which interface with the valve operator circuit will not impair the operability of the Safety Injection System contacts, since the VCT Low-Low level switchover contacts are in parallel with the protection system contacts and therefore cannot prevent operation of the respective valve in the presence of a safety signal. In addition, SI and VCT Low-Low Level switchover activate the four affected valves in the same direction i.e. BG LCV112B & C closed and BN LCV112D & E open.

Activation of the switchover circuitry is expected to be minimal since decreasing VCT level below normal level will initiate automatic make up (at 33%) if the make up system is in auto or initiate an alarm on the Main Control Board (at 26%) if the make up system is off or unable to provide sufficient make up.

7. Indicator, Alarm, and Test Features Provided for the Instrumentation
Used for Safety Functions

The applicants were requested to provide appropriate limiting conditions for operation for instrumentation used to initiate the safety functions identified in SNUPPS SER Section 7.3.2.9. The applicants have responded stating that the BOP ESFAC features that are safety-related have been identified in FSAR Section 7.3 and that the other instrumentation and controls are implicitly included in the technical specifications. The applicants are requested to supply information correlating each safety function identified in SER Section 7.3.2.9 with the existing technical specifications.

RESPONSE

7. Section 7.3.2.9 of the SER documents a concern that was first raised during a July 27, 1981 meeting between the NRC (ICSB) and SNUPPS. SNUPPS addressed this concern in its response to position 8 as documented in SLNRC 81-67, 8/14/81. The following list addresses the testing of the instrumentation mentioned in this response from a Technical Specification standpoint and gives SNUPPS position on its incorporation into the Specifications. The letter designations refer to Table 8-1 in response 8 in SLNRC 81-67:

- A. component cooling water surge tank level - isolation of non seismic piping - testing is covered under surveillance 4.7.3.a, 4.7.3.b.1, and 4.7.3.c.
- B. component cooling water return flow from reactor coolant pump thermal barrier cooling coil discharge header - testing is covered under surveillance 4.7.3.b.1.
- C. main feedwater pump trip oil pressure-starts the motor driven auxiliary feedwater pumps on loss of both main feedwater pumps - testing is covered under item 6g of table 4.3-2.
- D. component cooling water flow to non-seismic piping - testing is covered under surveillances 4.7.3.a, 4.7.3.b.1, and 4.7.3.c.
- E. essential service water flow to the air compressors - testing is covered under surveillances 4.7.4.a, 4.7.4.b.1, and 4.7.4.c.
- F. essential service water self cleaning strainer differential pressure - This parameter is used for normal control of the ESWS self-cleaning strainers, not to mitigate the consequences of some event, and is therefore not a safety concern. The testing of this feature does not belong in the Technical Specifications.
- G. essential service water temperature at power block discharge - This parameter is used for normal control of the Callaway Site UHS cooling towers, and not to mitigate the consequences of some event, and it is therefore not a safety parameter. This issue is also addressed in the response to question 5 above. The testing of this feature does not belong in the Technical Specifications.
- H. reactor coolant pump thermal barrier cooling coil discharge flow - Testing is covered under surveillance 4.7.3.b.1.
- I. diesel generator room ventilation control - This system is provided as a normal control function required to maintain room temperature within its limits. The diesel generator room temperatures are checked by surveillance 4.7.12 once per 12 hours. No further testing of this function is required in the Technical Specifications.

RESPONSE

7. (continued)

- J. essential service water pump house ventilation and ESW cooling tower electrical room ventilation function - Actuation of these systems is a normal occurrence required to maintain room temperature within required limits. The ESW pump room temperatures are checked every 12 hours by surveillance 4.7.12. No further testing is required.
- K. emergency fuel oil day tank level control - The fuel oil transfer pumps are provided with stop and start setpoints based on day tank level as a normal control function. Pump operation and tank level are surveilled in accordance with specification 4.8.1.1.2.a.1 and 4.8.1.1.2.a.3 at least once per month. No further testing is required.
- L. Turbine trip oil pressure/reactor trip on turbine trip - Testing is covered under item 16 of table 4.3-1.